

TOSHIBA PHOTOINTERRUPTER INFRARED LED + PHOTOTRANSISTOR

TLP822, TLP827

VCR, COMPACT DISK PLAYER
FLOPPY DISK DRIVE, FACSIMILE, PRINTER
VENDING MACHINE, TICKETING MACHINE
FOR VARIOUS POSITION DETECTION

The TLP822 and TLP827 are photointerrupters with a high radiant power GaAs infrared LED and a Si phototransistor combined.

- Small package
- Side mounting type : TLP822
- PWB direct mounting type : TLP827 (the oblong slit)
- Gap : 5mm
- Resolution : Slit width 0.5mm
- High current transfer ratio : $I_C/I_F=5\%$ (min) at $I_F=10\text{mA}$
- The detector side is of visible light cut type.
- Material of the package : Polycarbonate

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I _F	50	mA
	Forward Current Derating	(Ta>25℃)	ΔI _F /℃	−0.33	mA/℃
		(Ta>85℃)		−2 (Note)	
	Reverse Voltage		V _R	5	V
DETECTOR	Collector-Emitter Voltage		V _{CEO}	35	V
	Emitter-Collector Voltage		V _{ECO}	5	V
	Collector Power Dissipation		P _C	75	mW
	Collector Power Dissipation Derating		ΔP _C /℃	−1	mW/℃
	Collector Current		I _C	50	mA
	Operating Temperature Range	TLP822	T _{opr}	−25~85	℃
TLP827		−25~95			
Storage Temperature Range			T _{stg}	−40~100	℃
Soldering Temperature (5s.)			T _{sol}	260	℃

Note : TLP827 only

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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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RECOMMENDED OPERATING CONDITIONS

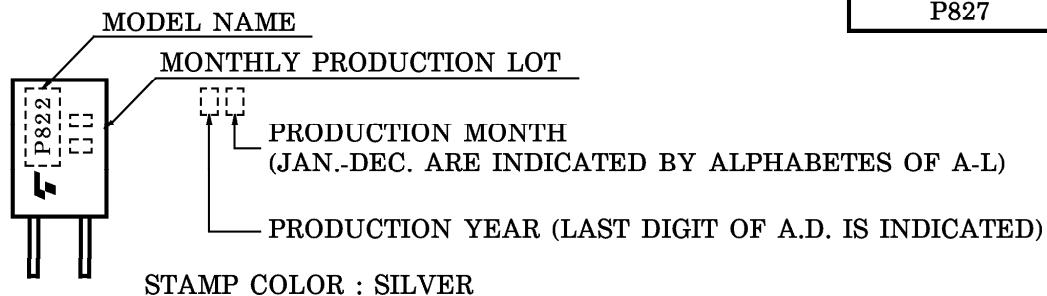
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{CC}	—	5	24	V
Forward Current	I_F	—	10	20	mA
Operating Temperature	T_{opr}	-10	—	75	°C

OPTO-ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.00	1.15	1.30	V
	Reverse Current	I_R	$V_R = 5\text{V}$	—	—	10	μA
	Peak Emission Wavelength	λ_P	$I_F = 10\text{mA}$	—	940	—	nm
DETECTOR	Dark Current	$I_D (I_{CEO})$	$V_{CE} = 24\text{V}, I_F = 0$	—	—	0.1	μA
	Peak Sensitivity Wavelength	λ_P	—	—	870	—	nm
COUPLED	Current Transfer Ratio	I_C / I_F	$V_{CE} = 2\text{V}, I_F = 10\text{mA}$	5	—	75	%
	Collector-Emitter Saturation Voltage	$V_{CE} (\text{sat})$	$I_F = 20\text{mA}, I_C = 0.5\text{mA}$	—	0.1	0.4	V
	Rise Time	t_r	$V_{CC} = 5\text{V}, I_C = 1\text{mA}$ $R_L = 1\text{k}\Omega$	—	15	50	μs
	Fall Time	t_f		—	15	50	

PRODUCT INDICATION

ABBREVIATION	TYPE
P822	TLP822
P827	TLP827



PRECAUTION

Please be careful of the followings.

1. If chemical are used for cleaning, the soldered surface only shall be cleaned with chemicals avoiding the whole cleaning of the package.
2. The container is made of polycarbonate. Polycarbonate is usually stable with acid, alcohol, and aliphatic hydrocarbons however, with peroxochemicals (such as benzene, toluene, and acetone), alkali, aromatic hydrocarbons, or chloric hydrocarbons, polycarbonate becomes cracked, swollen, or melted. Please take care when choosing a packaging material by referencing the table below.

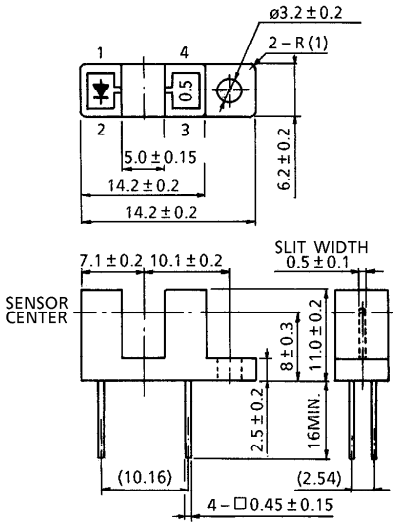
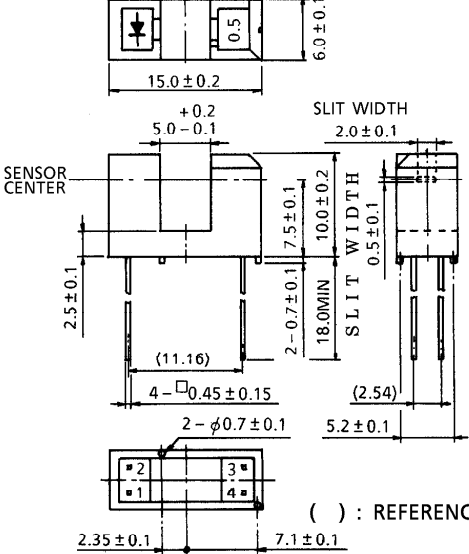
<Chemicals to avoid with polycarbonate>

	PHENOMENON	CHEMICALS
A	Little deterioration but staining	• nitric acid (low concentration), hydrogen peroxide, chlorine
B	Cracked, crazed, or swollen	• acetic acid (70% or more) • gasoline • methyl ethyl ketone, ethyl acetate, butyl acetate • ethyl methacrylate, ethyl ether, MEK • acetone, m-amino alcohol, carbon tetrachloride • carbon disulfide, trichloroethylene, cresol • thinners, oil of turpentine • triethanolamine, TCP, TBP
C	Melted { } : Used as solvent.	• concentrated sulfuric acid • benzene • styrene, acrylonitrile, vinyl acetate • ethylenediamine, diethylenediamine • {chloroform, methyl chloride, tetrachloromethane, dioxane, 1, 2-dichloroethane}
D	Decomposed	• ammonia water • other alkali

3. TLP822, TLP827 shall be mounted on unwarped surface.
4. Screw shall be tightened to clamping torque of 0.59N·m.

OUTLINE DRAWINGS

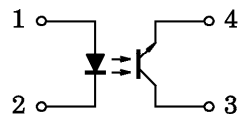
Unit in mm

TLP822  () : REFERENCE VALUE	TLP827  () : REFERENCE VALUE
JEDEC	—
EIAJ	—
TOSHIBA	11-20B2

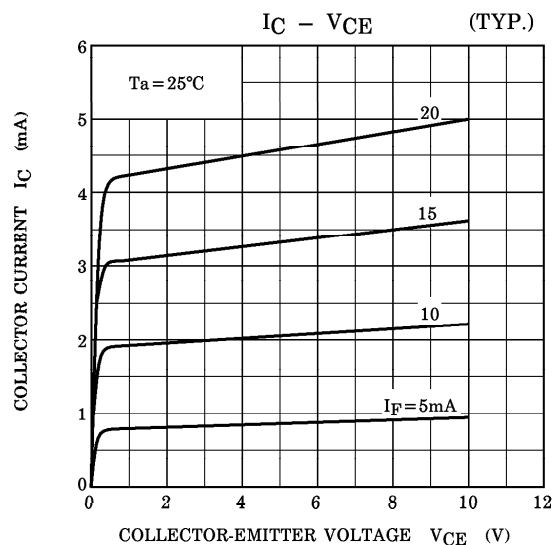
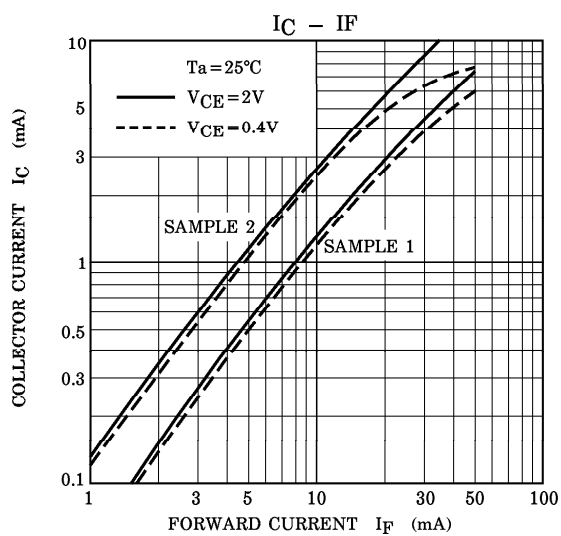
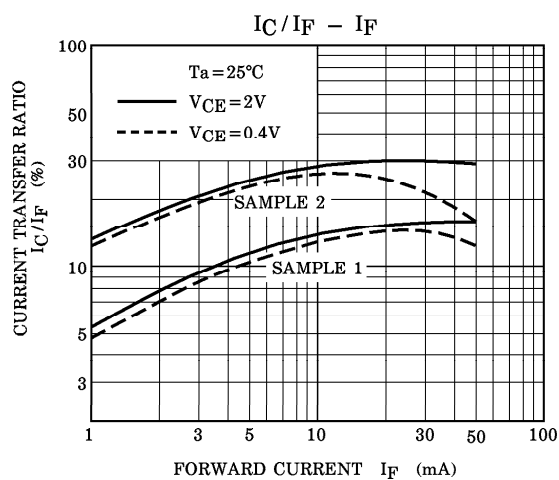
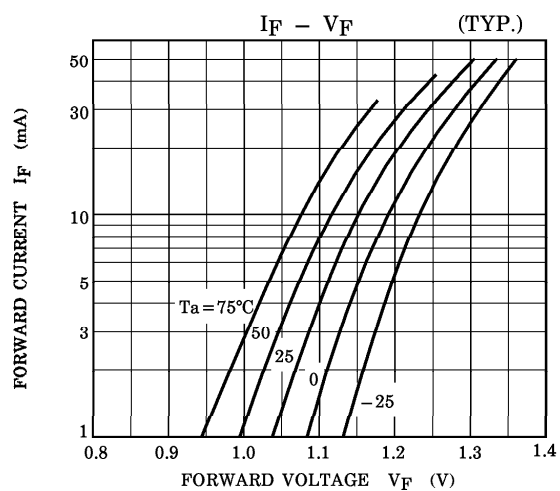
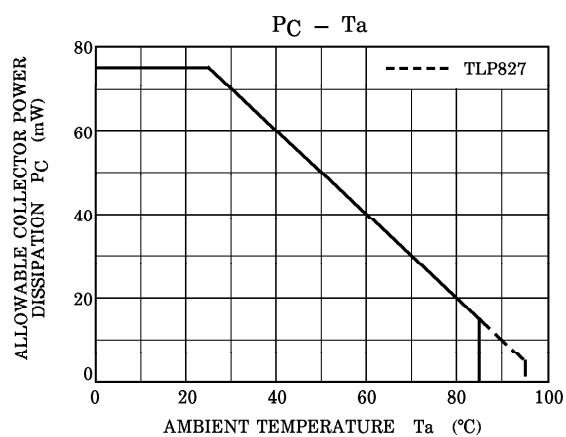
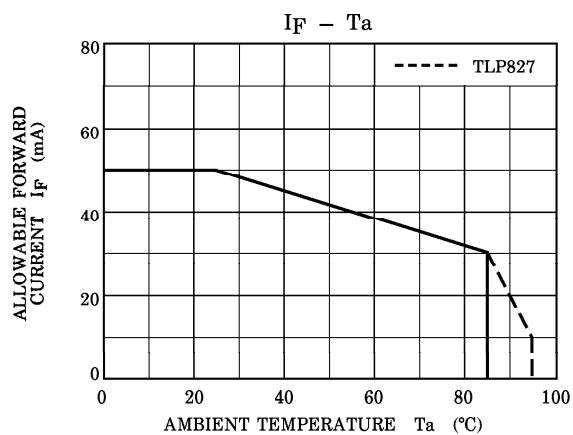
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EIAJ	—
TOSHIBA	11-15B1

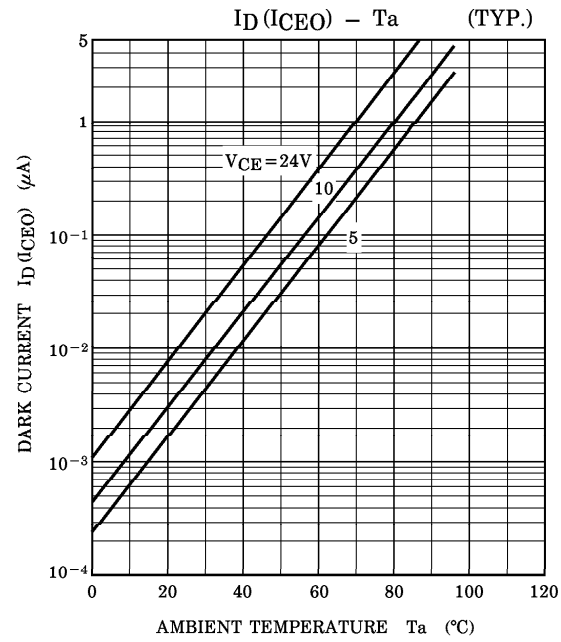
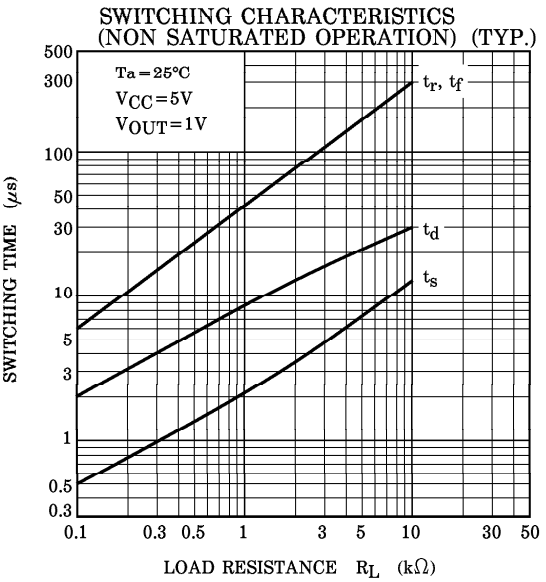
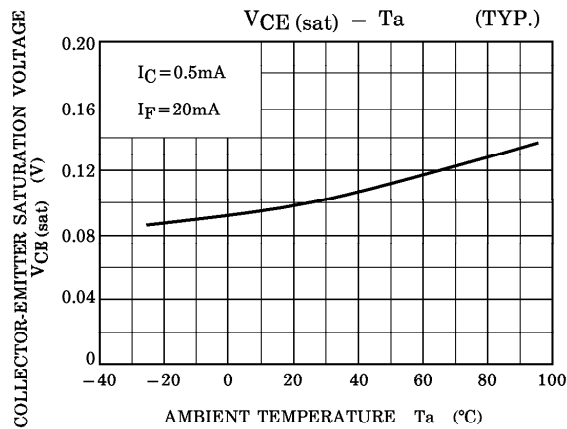
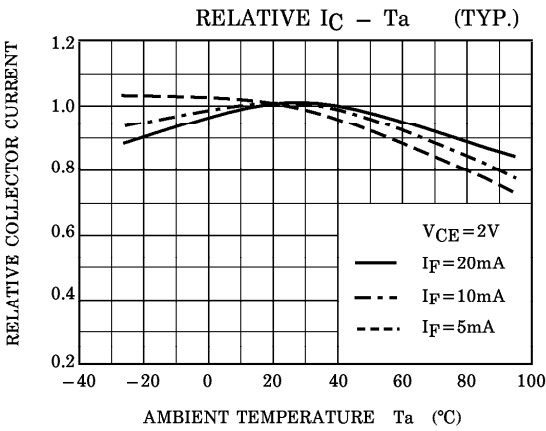
Weight : 0.87g (typ.) (TLP822)
0.72g (typ.) (TLP827)

PIN CONNECTION

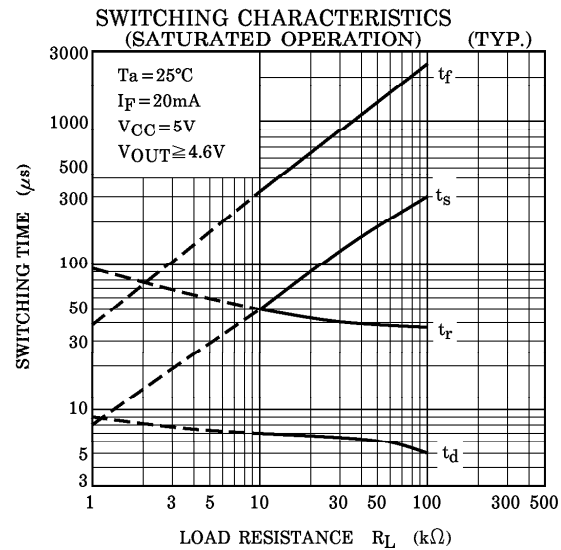
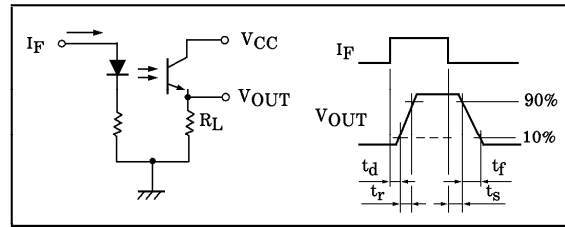


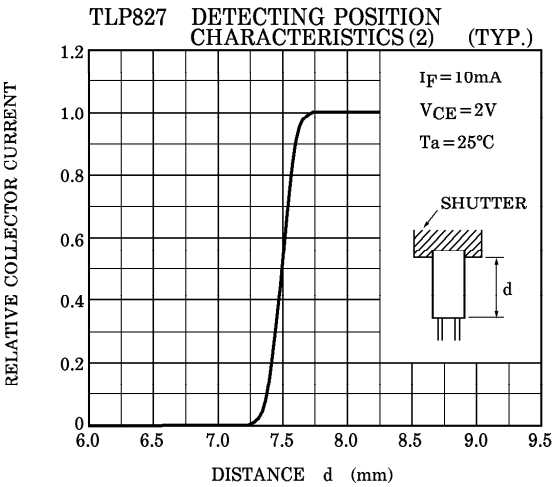
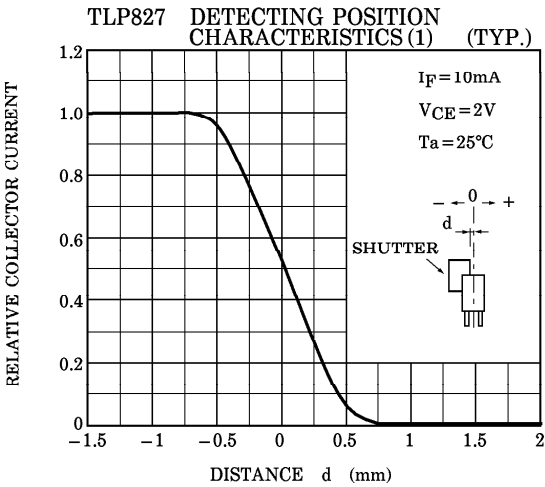
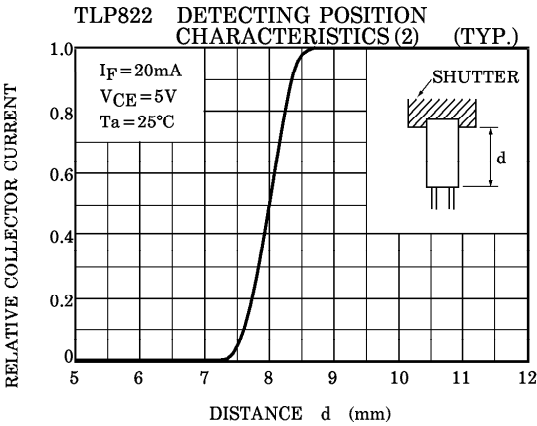
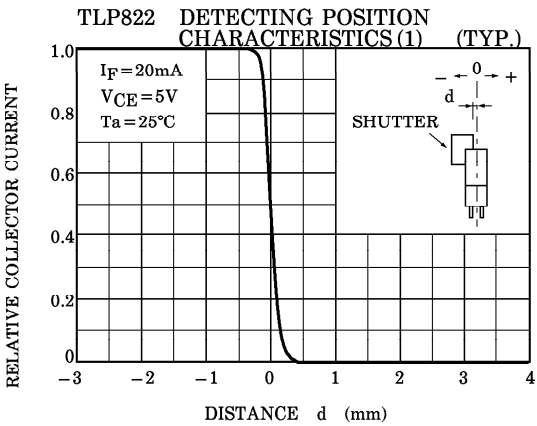
- 1. ANODE
- 2. CATHODE
- 3. COLLECTOR
- 4. EMITTER





SWITCHING TIME TEST CIRCUIT





POSITIONING OF SHUTTER AND DEVICE

To operate correctly, make sure that the shutter and the device are positioned as shown in the figure below.

The shift pitch of the shutter must be set wider than the slit width of the device.
Determine the width taking the switching time into consideration.

TLP822

